Space Weather Forecast

Issued on Monday, 29 May 2023 at 01:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: R1/R2 radio blackouts likely at times throughout.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, with one Moderate flare observed from the largest and most active region on the disc, this region is also complex. Otherwise, there have been frequent Common-class flares observed, mostly from two active regions in the northwest which are also magnetically complex. All other regions on the disc are either small or simple. No Earth-directed Coronal Mass Ejections (CMEs) were observed during the period.

Solar Wind / Geomagnetic Activity: Solar winds have remained at slightly elevated levels between 400 and 480 km/s. The important north-south component was predominantly negative until 28/1230 UTC, and has since weakly fluctuated. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to remain Low to Moderate, with the main risk of significant flare activity from the large and complex region in the south. There is a slight chance of Strong-class flares.

Solar Wind / Geomagnetic Activity: A weak Coronal Mass Ejection (CME) that left the Sun on 25 May may give a glancing blow at Earth on Day 1 (29 May). A second CME from an eruption on 26 May could give a glancing blow at Earth late on the Day 2 (30 May) or on Day 3 (31 May). However, both are likely to pass Earth without effect. Solar winds are likely to remain largely at slightly elevated levels due to the influence of coronal hole fast winds. Geomagnetic activity is expected to be mainly Quiet to Unsettled (Kp 0-3), but with a risk of Active (Kp4) or G1/Minor Storm intervals (Kp5) Days 1-3 due to potential CME impacts.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is a slight chance of reaching the Minor Storm threshold should any larger flares occur, mainly from the large region in the south.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	20	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	60	60	70
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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